Coastal Ocean Monitoring and Prediction System (COMPS)

Region: West Florida
Date Project Initiated: August 2004
(current number: NA04NOS4730174)

Brief Project Summary

COMPS is a coordinated program of coastal ocean observing and modeling for the purposes of describing, understanding, and predicting coastal ocean conditions of societal importance. COMPS maintains an array of sensors, both along the coastline and within the coastal ocean, for observing the sea level, currents at the surface and across the water column, water temperature and salinity, and surface meteorology. COMPS also marshals remotely sensed satellite data to produce mappings of sea surface height and temperature, surface color and geostrophic currents, and simulated surface drifter trajectories.

IOOS INTEGRATED OCEAN OBSERVING SYSTEM

COMPS contributes to the Integrated Ocean Observing System (IOOS) by
- modeling linkages between the deep-ocean, the coastal ocean, and the estuaries
- applying ocean observations to address maritime transportation, harmful algal blooms, fisheries ecology, and hurricane storm surge

Project management is under the direction of Dr. M. Luther and Dr. R. Weisberg. Luther has primary responsibility for observations along the coast and in Tampa Bay. Weisberg has primary responsibility for observations and models of the coastal ocean.

Key Accomplishments

In situ Measurements, HF-Radar, and Satellite Remote Sensing

- Through coordination with the Southeast Atlantic Coastal Ocean Observing System (SEACOOS), COMPS maintains 10 in-situ moorings (six with real time telemetry and four with delayed data access), three HF-radar (long-range CODAR) sites for surface currents (one joint with Mote Marine Lab and Rutgers University), 12 coastal stations, various satellite data analysis products (cloud-free SST and color, sea surface height and surface geostrophic currents, simulated surface drifter trajectories), and temperature and salinity profiling. See *http://comps.marine.usf.edu* for COMPS data and *http://ocgweb.marine.usf.edu* for other analyses.

Water Quality

- A new water quality and stream flow monitoring was constructed on Booker Creek, a Tampa Bay tributary that drains a large urban watershed. Real-time data are provided on water level, temperature, conductivity, pH, and dissolved oxygen, along with a stream flow gauge and meteorological observations of wind speed, air temperature, humidity, barometric pressure, and precipitation. Campbell Park Elementary School teachers and students participate in its operation. Data are relayed to the Educational Distance Learning network (*www.edlonline.org*) and are incorporated in Web-based math and science curricula. Twenty teachers from Campbell Park and Baypoint Elementary schools attended an April 2006 workshop to learn about the site and real-time data usage. Additional teacher training is scheduled for October 2006. COMPS continues to work with Pier Aquarium, Campbell Park Elementary, and Pinellas County staff members to develop educational materials and to encourage teacher participation.

Data Access and Distribution

- COMPS data management practices were enhanced in a database-driven site (*http://compsweb.marine.usf.edu/*) with upgraded displays, and a new front end is under construction. COMPS data are accessible in an Open Geospatial Consortium (OGC) compliant manner, and Web Mapping Application Chameleon is built on Map Server. All real-time data are served to the National Oceanic and Atmospheric Administration through the National Data Buoy Center. Work is in progress to provide keyhole markup language files for viewing COMPS data via Google Earth.

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Regional Partnerships

- Informal partnerships exist with the Florida Department of Environmental Protection Coastal and Aquatic Managed Areas and the Florida Fish and Wildlife Commission Fish and Wildlife Research Institute to integrate their data into COMPS and IOOS. Data and data management are provided for the Gulf of Mexico Coastal Ocean Observing System, Southeast Coastal Ocean Observing Regional Association, and SEACOOS.

Hydrodynamic Modeling

- The Tampa Bay region is susceptible to inundation by hurricane storm surge. The region has not had a direct hit since 1921, but a future one is inevitable. Using the finite volume coastal ocean model (FVCOM) COMPS completed three studies (two published). The first simulates the Hurricane Charley effects in the Charlotte Harbor estuary. Despite category 4 status on landfall, the model explained why the Charley surge was small and why a new inlet was cut through N. Captiva Island. The second offers many scenarios for Tampa Bay that allow explanations of the Charley surge behavior. All these hurricane surge studies are available on the project Web site.

- A 3-D, fully baroclinic nowcast/forecast model of the West Florida shelf circulation is available at *http://ocgweb.marine.usf.edu*. With support marshaled from other resources, this modeling system nests a Regional Ocean Model System (ROMS) WFS domain model within the 1/12th degree North Atlantic Hybrid Coordinate Ocean Model (HYCOM). An interactive user interface allows access to various model fields, including 3-D particle trajectory forecasts.

Primary Contact

Dr. Mark Luther
College of Marine Science
University of South Florida
140 Seventh Avenue South
St. Petersburg, FL 33701

Project Web Sites

http://comps.marine.usf.edu and http://ocgweb.marine.usf.edu